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Volume parameters of some Diels - Alder reactions involving C=C, C=S, and N=N bonds

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Abstract

The effect of a hydrostatic pressure of up to 1000 kg cm-2 on the rate constants of the Diels - Alder reactions of maleic anhydride with 1,2,3,4-tetraphenylcyclopentadiene and with 6,13-dichloropentacene, of 4-phenyl-1,2,4-triazoline-3,5-dione with hexachlorocyclopentadiene, and of thiobenzophenone with isoprene was studied at 25°C. The volume parameters and ratios of the activation to reaction volumes make it possible to exclude electrostriction of the solvent during transition state solvation in all the reactions studied, which corresponds to the nonpolar nature of the transition state. © 2005 Springer Science+Business Media, Inc.

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Keywords

Activation volumes, Diels - Alder reactions, Reaction volumes